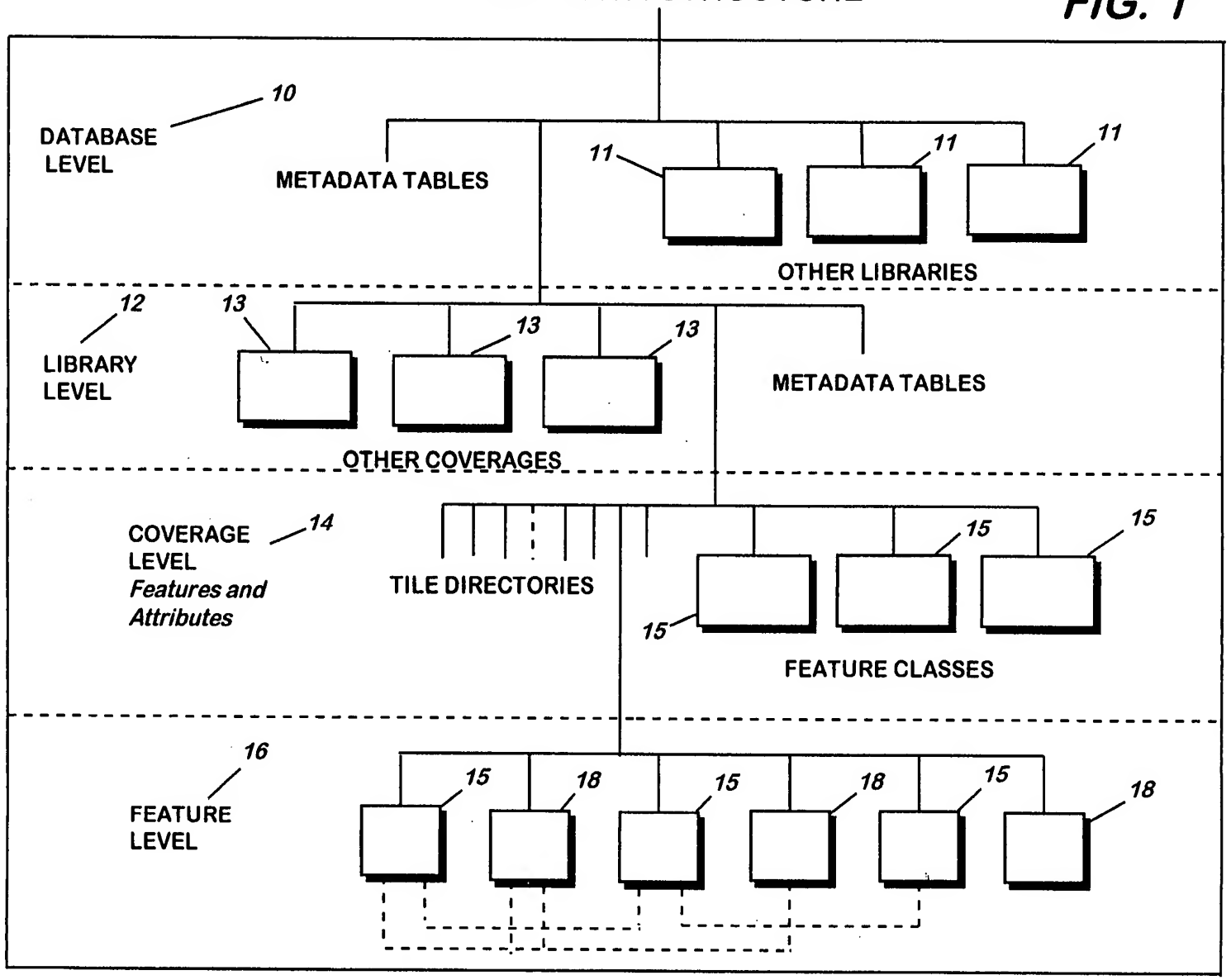
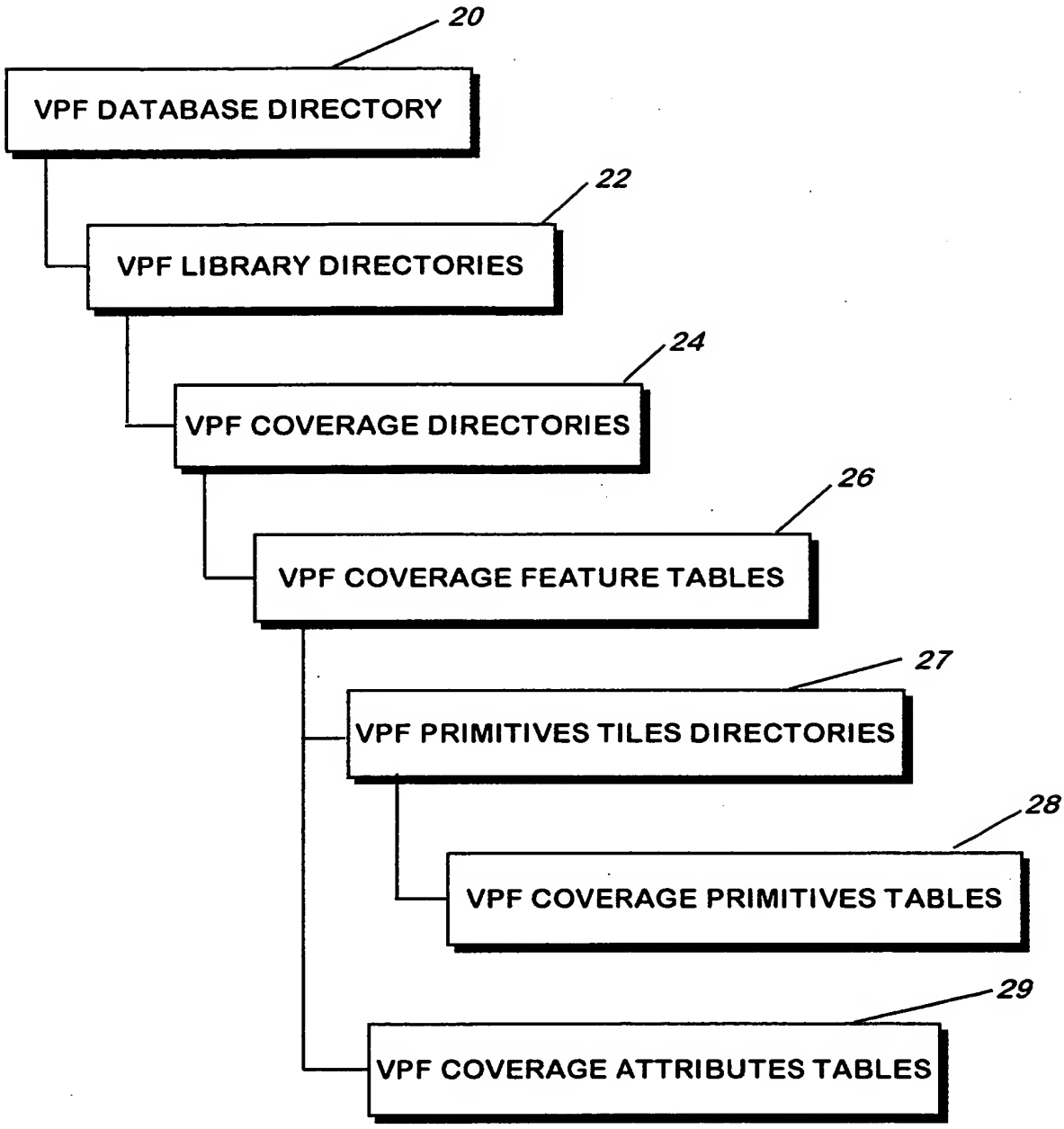
PATENT & TRADEMARK OFFICE
FEB 04 2004
OIPE
JC174

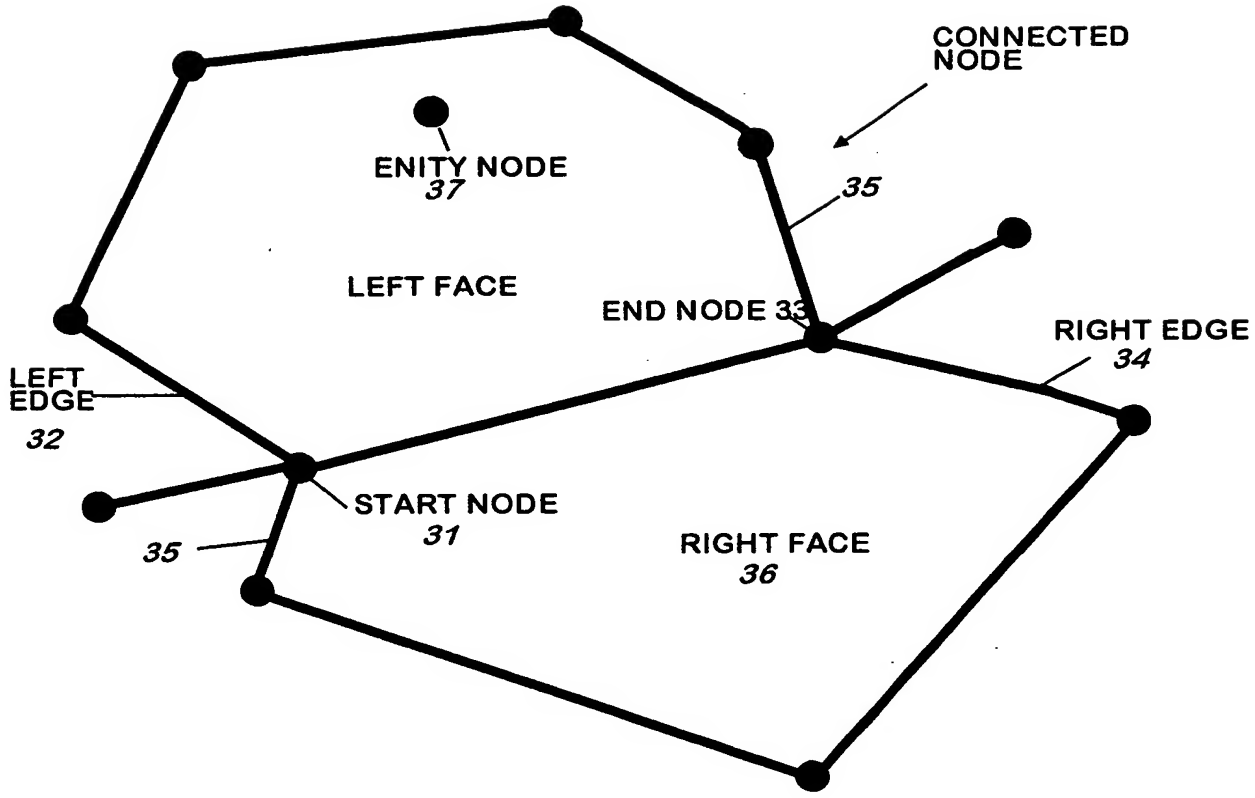
PRIOR ART
FIG. 1





PRIOR ART

FIG. 2



PRIOR ART

FIG. 3

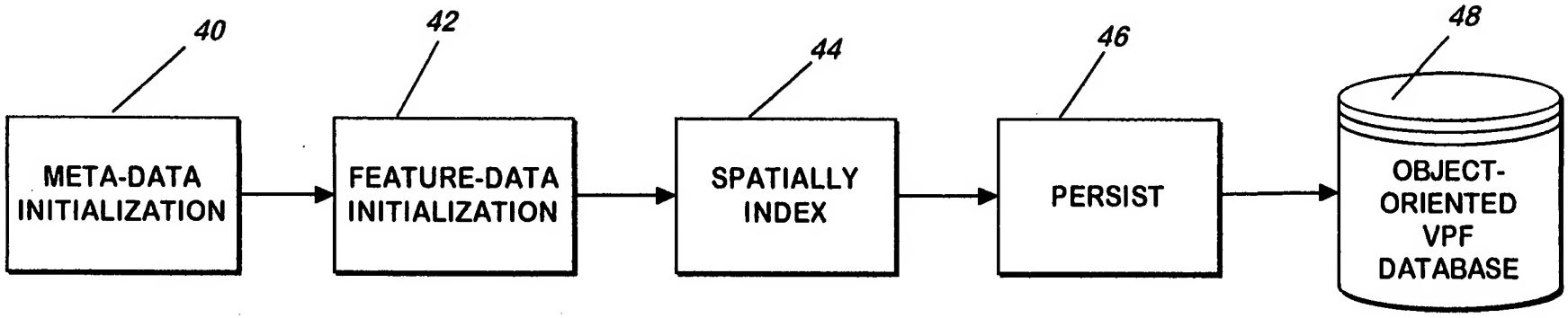

40
META-DATA INITIALIZATION
42
FEATURE-DATA INITIALIZATION
44
SPATIALLY INDEX
46
PERSIST
48
OBJECT-ORIENTED VPF DATABASE

FIG. 4

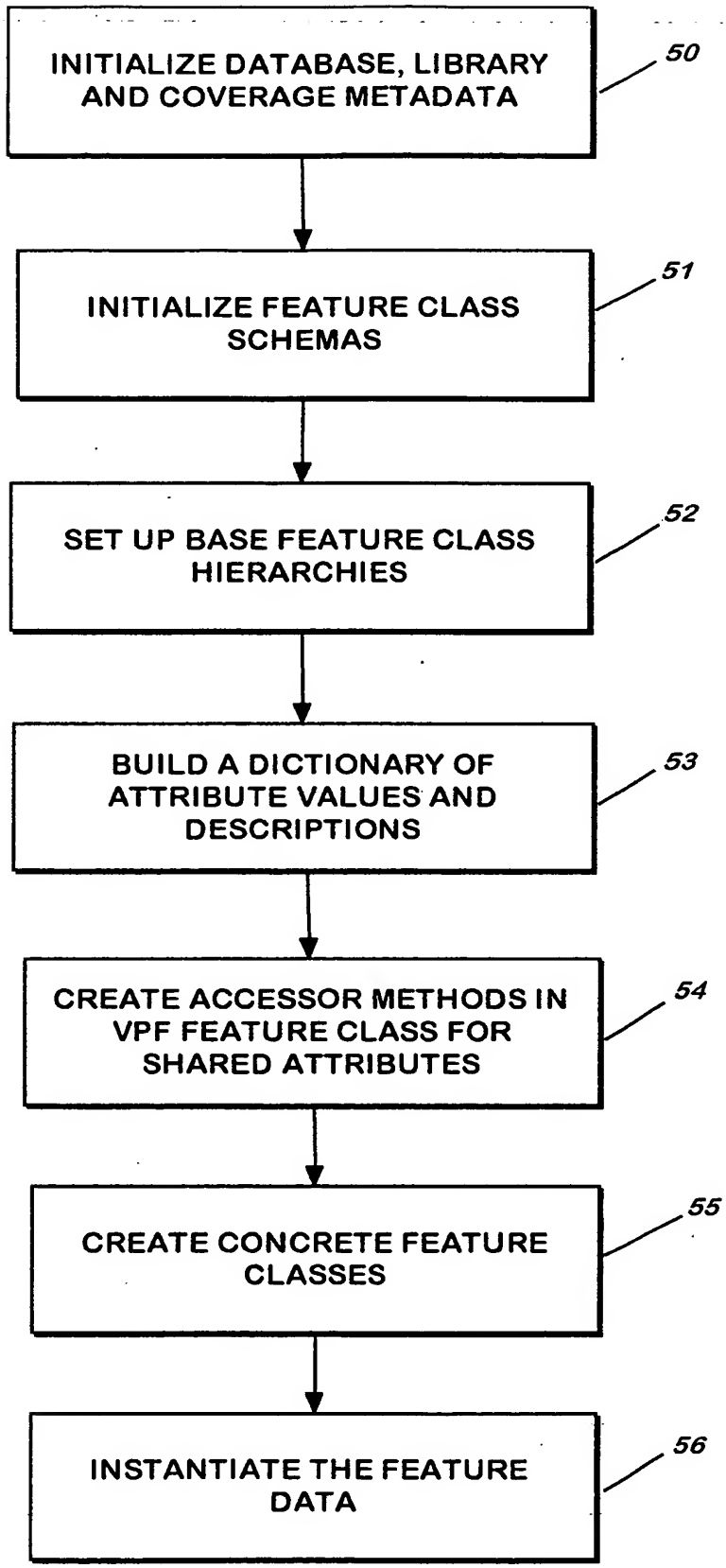

INITIALIZE DATABASE, LIBRARY AND COVERAGE METADATA
50
INITIALIZE FEATURE CLASS SCHEMAS
51
SET UP BASE FEATURE CLASS HIERARCHIES
52
BUILD A DICTIONARY OF ATTRIBUTE VALUES AND DESCRIPTIONS
53
CREATE ACCESSOR METHODS IN VPF FEATURE CLASS FOR SHARED ATTRIBUTES
54
CREATE CONCRETE FEATURE CLASSES
55
INSTANTIATE THE FEATURE DATA
56

FIG. 5

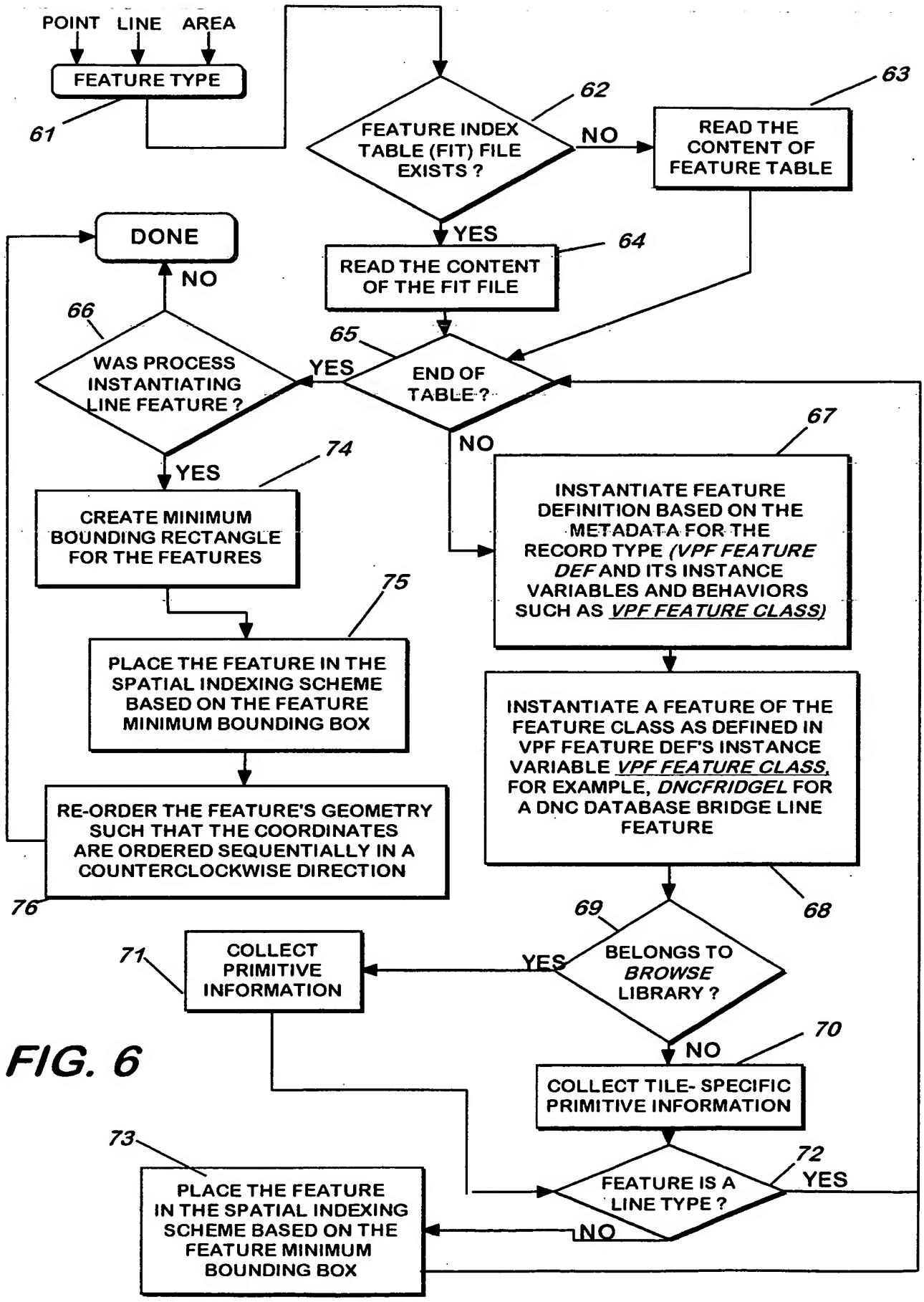

POINT
LINE
AREA
FEATURE TYPE
61
FEATURE INDEX TABLE (FIT) FILE EXISTS ?
62
NO
READ THE CONTENT OF FEATURE TABLE
63
YES
READ THE CONTENT OF THE FIT FILE
64
DONE
NO
66
WAS PROCESS INSTANTIATING LINE FEATURE ?
YES
65
END OF TABLE ?
NO
67
YES
74
CREATE MINIMUM BOUNDING RECTANGLE FOR THE FEATURES
INSTANTIATE FEATURE DEFINITION BASED ON THE METADATA FOR THE RECORD TYPE (VPF FEATURE DEF AND ITS INSTANCE VARIABLES AND BEHAVIORS SUCH AS VPF FEATURE CLASS)
75
PLACE THE FEATURE IN THE SPATIAL INDEXING SCHEME BASED ON THE FEATURE MINIMUM BOUNDING BOX
INSTANTIATE A FEATURE OF THE FEATURE CLASS AS DEFINED IN VPF FEATURE DEF'S INSTANCE VARIABLE VPF FEATURE CLASS, FOR EXAMPLE, DNCFRIDGEL FOR A DNC DATABASE BRIDGE LINE FEATURE
RE-ORDER THE FEATURE'S GEOMETRY SUCH THAT THE COORDINATES ARE ORDERED SEQUENTIALLY IN A COUNTERCLOCKWISE DIRECTION
76
68
69
BELONGS TO BROWSE LIBRARY ?
YES
71
COLLECT PRIMITIVE INFORMATION
NO
70
COLLECT TILE- SPECIFIC PRIMITIVE INFORMATION
73
PLACE THE FEATURE IN THE SPATIAL INDEXING SCHEME BASED ON THE FEATURE MINIMUM BOUNDING BOX
72
FEATURE IS A LINE TYPE ?
YES
NO

FIG. 6

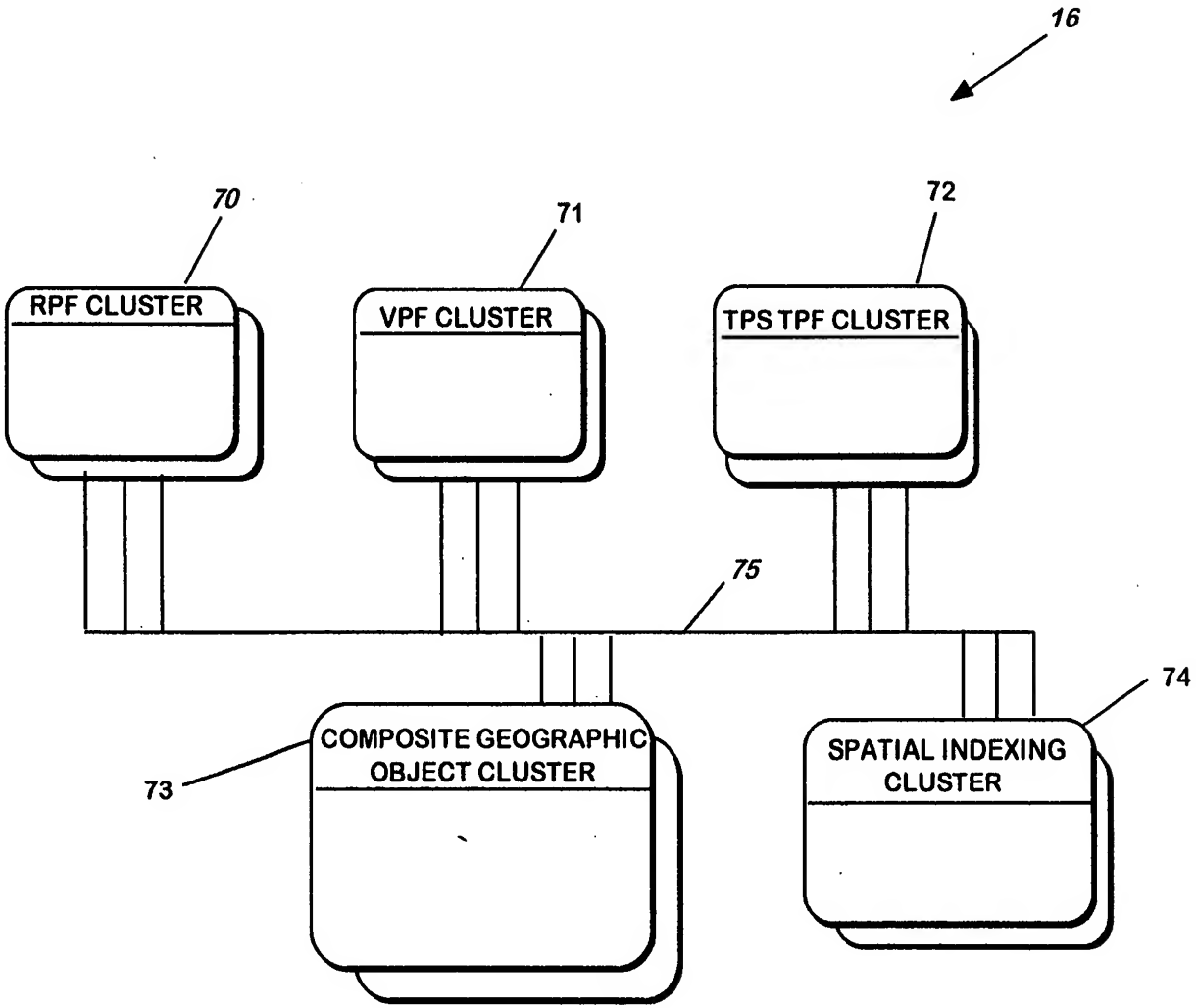

16
70
71
72
RPF CLUSTER
VPF CLUSTER
TPS TPF CLUSTER
75
74
73
COMPOSITE GEOGRAPHIC OBJECT CLUSTER
SPATIAL INDEXING CLUSTER

FIG. 7

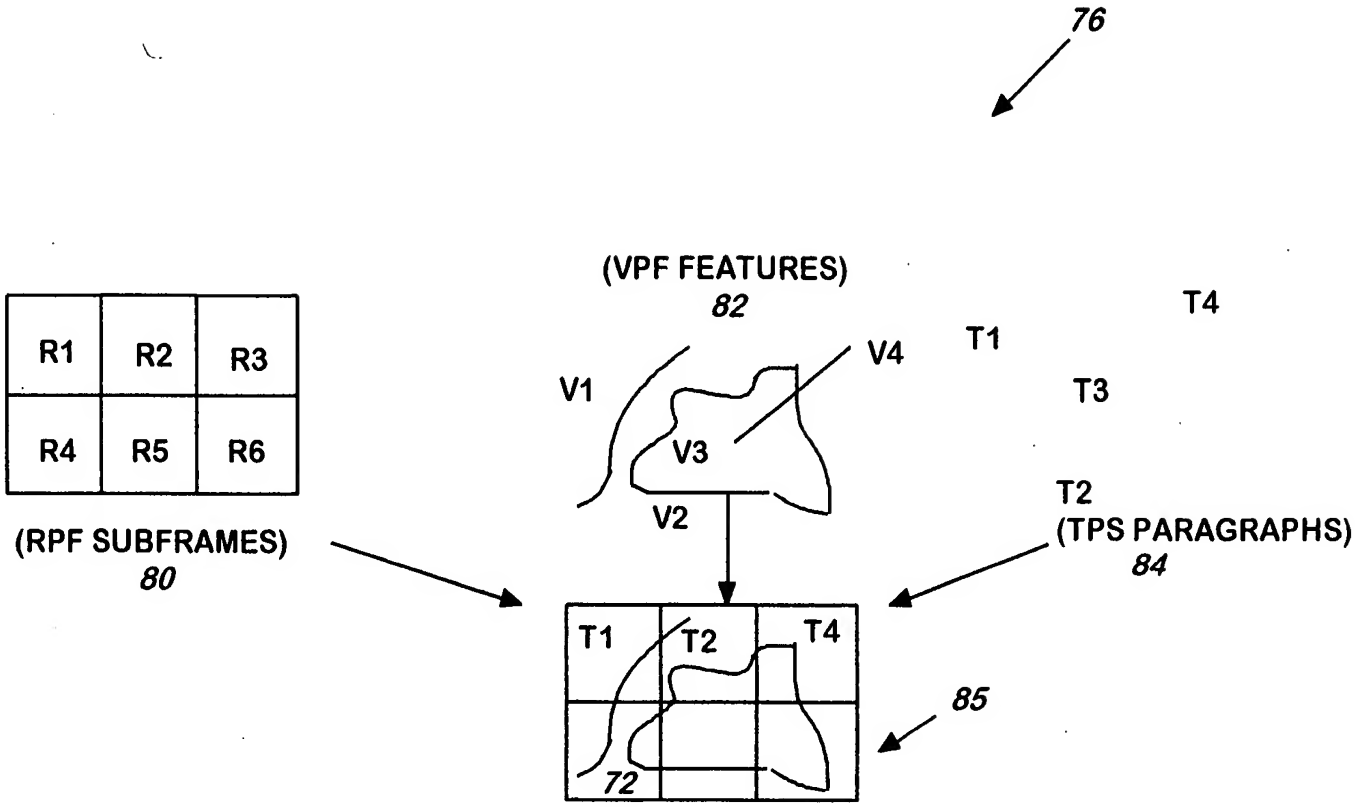

76
(VPF FEATURES)
82
R1
R2
R3
R4
R5
R6
(RPF SUBFRAMES)
80
V1
V2
V3
V4
T1
T2
T3
T4
(TPS PARAGRAPHS)
84
T1
T2
T4
85
72

FIG. 8

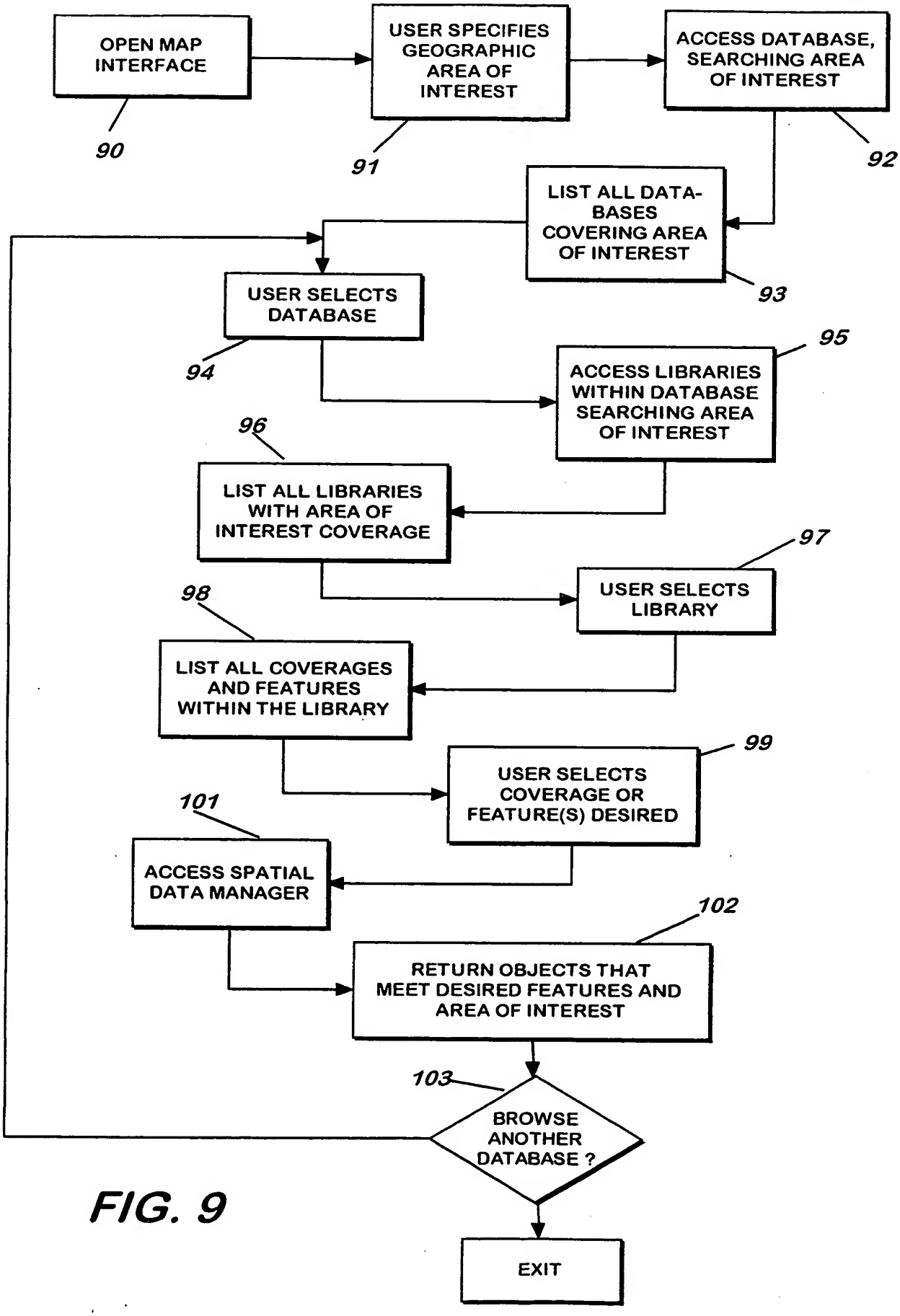
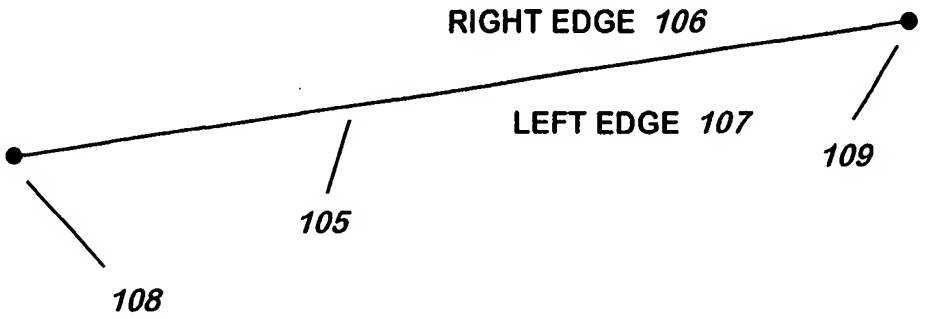
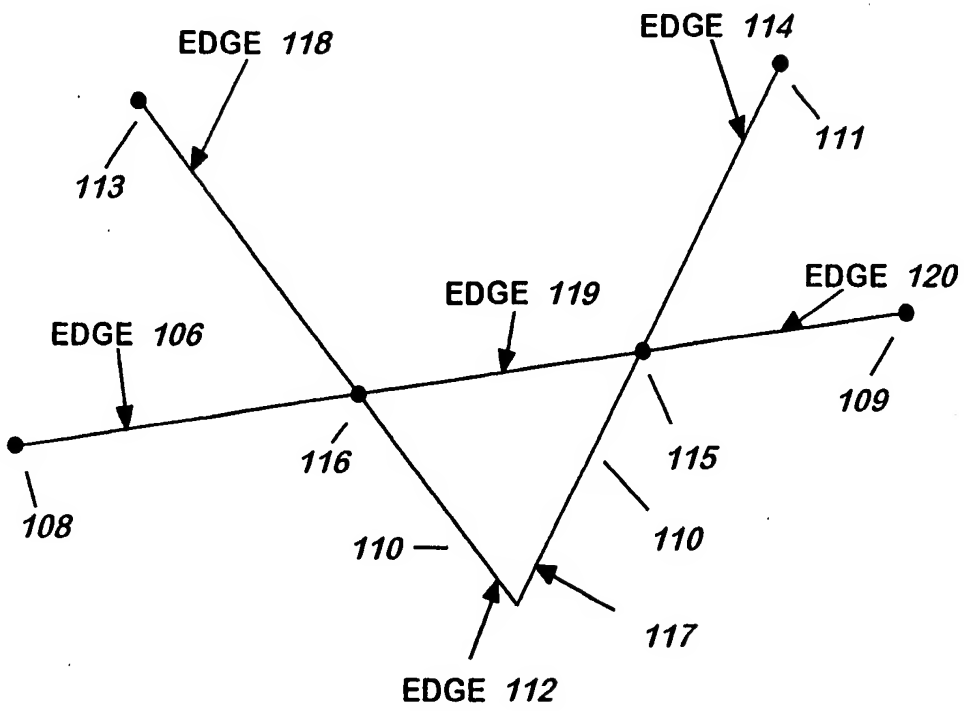

OPEN MAP INTERFACE
90
USER SPECIFIES GEOGRAPHIC AREA OF INTEREST
91
ACCESS DATABASE, SEARCHING AREA OF INTEREST
92
LIST ALL DATA-BASES COVERING AREA OF INTEREST
93
USER SELECTS DATABASE
94
ACCESS LIBRARIES WITHIN DATABASE SEARCHING AREA OF INTEREST
95
LIST ALL LIBRARIES WITH AREA OF INTEREST COVERAGE
96
USER SELECTS LIBRARY
97
LIST ALL COVERAGES AND FEATURES WITHIN THE LIBRARY
98
USER SELECTS COVERAGE OR FEATURE(S) DESIRED
99
ACCESS SPATIAL DATA MANAGER
101
RETURN OBJECTS THAT MEET DESIRED FEATURES AND AREA OF INTEREST
102
BROWSE ANOTHER DATABASE ?
103
EXIT

FIG. 9



ORIGINAL EDGE INFORMATION:	
PRIMID:	105
START NODE:	108
END NODE:	109
LEFT EDGE:	107
RIGHT EDGE:	106
LEFT FACE:	1
RIGHT FACE:	1

FIG. 10



PRIMID:	106
START NODE:	108
END NODE:	116
LEFT EDGE:	106
RIGHT EDGE:	117
LEFT FACE:	1
RIGHT FACE:	1

FIG. 11

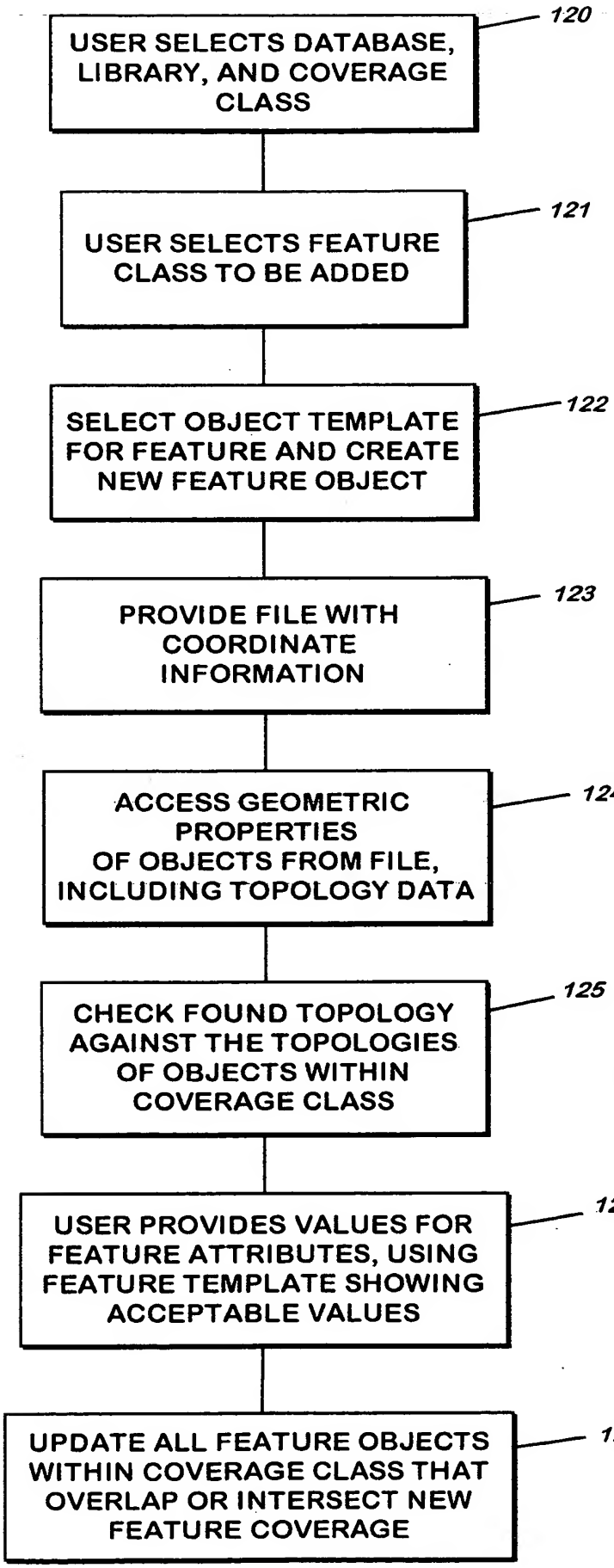

USER SELECTS DATABASE, LIBRARY, AND COVERAGE CLASS
120
USER SELECTS FEATURE CLASS TO BE ADDED
121
SELECT OBJECT TEMPLATE FOR FEATURE AND CREATE NEW FEATURE OBJECT
122
PROVIDE FILE WITH COORDINATE INFORMATION
123
ACCESS GEOMETRIC PROPERTIES OF OBJECTS FROM FILE, INCLUDING TOPOLOGY DATA
124
CHECK FOUND TOPOLOGY AGAINST THE TOPOLOGIES OF OBJECTS WITHIN COVERAGE CLASS
125
USER PROVIDES VALUES FOR FEATURE ATTRIBUTES, USING FEATURE TEMPLATE SHOWING ACCEPTABLE VALUES
126
UPDATE ALL FEATURE OBJECTS WITHIN COVERAGE CLASS THAT OVERLAP OR INTERSECT NEW FEATURE COVERAGE
127

FIG. 12

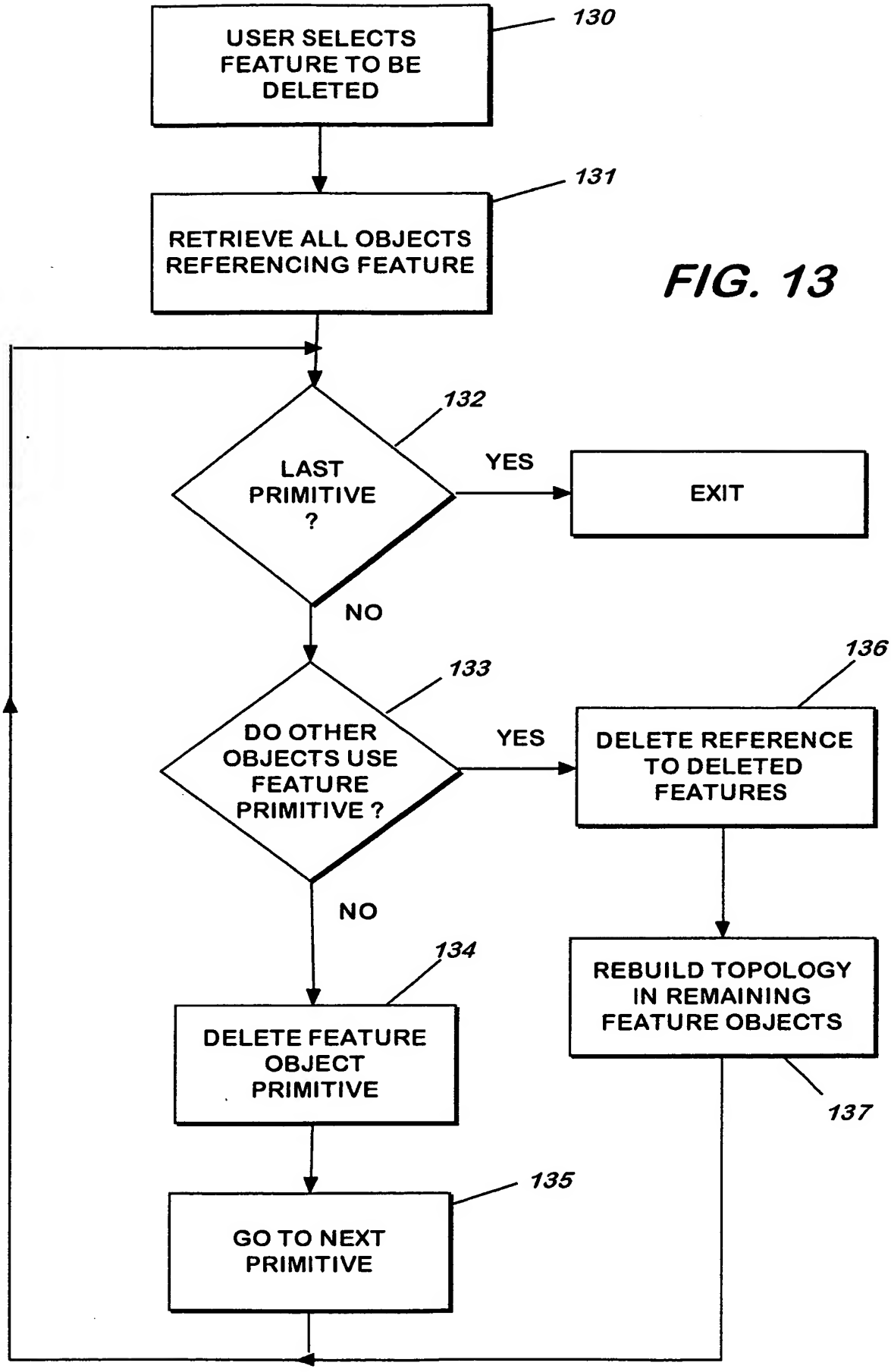

USER SELECTS FEATURE TO BE DELETED
130
RETRIEVE ALL OBJECTS REFERENCING FEATURE
131
LAST PRIMITIVE ?
132
YES
EXIT
NO
DO OTHER OBJECTS USE FEATURE PRIMITIVE ?
133
YES
DELETE REFERENCE TO DELETED FEATURES
136
NO
DELETE FEATURE OBJECT PRIMITIVE
134
REBUILD TOPOLOGY IN REMAINING FEATURE OBJECTS
137
GO TO NEXT PRIMITIVE
135

FIG. 13